Amendments to the Claims

Claims 1 – 9 (Canceled)

10. (Currently Amended) An out-of-band signaling model media control (MC) terminal for a Home Phoneline Network Association (HPNA) network, the MC terminal comprising:

a Quality of Service (QoS) management entity (QME) receiving an end-to-end QoS message characterizing a down-stream session for a user application, the end-to-end QoS message including at least one QoS parameter set that is expressed at layer 3 and higher of an ISO/IEC basic reference model of Open Systems Interconnection (OSI) (ISO/IEC 7498-1) and is to be passed down to layer 2 of the MC terminal for enabling QoS traffic transport for the session;

an admission control entity (ACE) performing an admission control decision relating to the session based on the end-to-end QoS message characterizing the QoS stream and concurrent bandwidth usage of the HPNA network;

a frame classification entity (FCE) located at a logical link control (LLC) sublayer of the MC terminal, the FCE receiving a data frame for the down-stream session, the FCE classifying the received data frame for a media access control (MAC) sublayer based on QoS information associated with the received data frame and associating the classified data frame with a QoS stream queue physically located at the MC terminal and corresponding to a classification of the data frame; and

a frame scheduling entity (FSE) located at the MAC sublayer of the MC terminal, the FSE scheduling transmission of the data frame to a destination for the data frame based on a QoS requirement associated with the down-stream QoS stream,

wherein the FCE includes a frame classification table containing at least one entry having a frame classifier that is used for classifying the data frame received for the down-stream session, and

wherein the FSE includes a frame scheduling table containing QoS scheduling information for the QoS stream queue associated with the classified data frame, and

wherein the QoS scheduling information includes a set of QoS parameter values, a QoS stream identification (ID) for the QoS stream of the classified data frame and queue status information for the QoS stream queue, and

~~The out of band signaling model MC terminal according to claim 9,~~ wherein the QME of the MC terminal receives an end-to-end QoS message containing information indicating that the down-stream QoS session is terminating,

further wherein the FSE, in response to the end-to-end QoS message containing information indicating that the down-stream session is terminating, removes the corresponding entry from the scheduling table, and

further wherein the FCE, in response to the end-to-end QoS message containing information that the down-stream session is terminating, removes the entry having the frame classifier that is used for classifying a data frame for the down-stream session from the classification table.

Claims 11-18 (Canceled)

19. (Currently Amended) An out-of-band signaling model media control (MC) terminal for a Home Phoneline Network Association (HPNA) network, the MC terminal comprising:

a Quality of Service (QoS) management entity (QME) receiving an end-to-end QoS message characterizing a down-stream session for a user application, the end-to-end QoS message including at least one QoS parameter set that is expressed at layer 3 and higher of an ISO/IEC basic reference model of Open Systems Interconnection (OSI) (ISO/IEC 7498-1) and is to be passed down to layer 2 of the MC terminal for enabling QoS traffic transport for the session; and

an admission control entity (ACE) performing an admission control decision relating to the session based on the end-to-end QoS message characterizing the QoS stream and concurrent bandwidth usage of the HPNA network,

wherein the end-to-end QoS message characterizing the session is a request for admitting the session to the HPNA network, and

wherein the ACE, responsive to the end-to-end QoS message, rejects or admits the requesting session to the HPNA network based on an outcome of the admission control decision, and

wherein the QME, responsive to an admitted session, establishes at least one QoS stream in layer 2 of the MC terminal for transporting the traffic of the session between logical link control (LLC) sublayer entities within the HPNA network, and

wherein the QME assigns a QoS stream identifier (ID) to the admitted session, and

wherein the destination for the data frame is at least one out-of-band signaling model non-media control (non-MC) terminal, and

further wherein each non-MC terminal includes an FCE located at an LLC sublayer of the non-MC terminal, the FCE of at least one non-MC terminal receiving a data frame from a higher layer of the non-MC terminal than the LLC sublayer of the non-MC terminal, the data frame being part of a session originating at the non-MC terminal, the FCE of the non-MC terminal classifying the data frame received from the higher layer of the non-MC terminal for a MAC sublayer of the non-MC terminal based on frame classification information contained in the received data frame, the FCE of the non-MC terminal associating the classified data frame with a QoS stream queue corresponding to a classification of the data frame received from the higher layer of the non-MC terminal, and

further wherein the non-MC terminal further includes a frame scheduling entity (FSE) located at the MAC sublayer of the non-MC terminal, the FSE of the non-MC terminal scheduling transmission of the data frame received from the higher layer of the non-MC terminal based on QoS information associated with the data frame received from the higher layer of the non-MC terminal, and

further wherein the FSE of the non-MC terminal includes a frame scheduling table containing QoS scheduling information for the QoS stream queue associated with the classified data frame, and

~~The out-of-band signaling model MC terminal according to claim 18,~~ further wherein the QME of the non-MC terminal receives a frame having associated QoS information indicating a corresponding QoS stream originating at the non-MC terminal is terminating,

wherein the FSE of the non-MC terminal, in response to the QoS information indicating that the session originating at the non-MC terminal is terminating, removes an entry corresponding to the session originating at the non-MC terminal from the frame scheduling table at the non-MC terminal, and

wherein the FCE of the non-MC terminal, in response to the QoS information indicating the session originating at the non-MC terminal is terminating, removes an entry having a frame classifier for classifying a data frame that is part of the session originating at the non-MC terminal.

20. (Original) The out-of-band signaling model MC terminal according to claim 19, wherein the non-MC terminal sends an end-to-end QoS message containing QoS information indicating that the session is terminating,

wherein the QME of the MC terminal receives the end-to-end QoS message containing information indicating that the QoS session is terminating, and

wherein the FSE of the MC terminal, in response to the end-to-end QoS message containing information indicating that the session is terminating, removes an entry from the scheduling table corresponding to the session that is terminating.

Claims 21-28 (Canceled)

29. (Currently Amended) An out-of-band signaling model media control (MC) terminal for a Home Phoneline Network Association (HPNA) network, the MC terminal comprising:

a Quality of Service (QoS) management entity (QME) receiving an end-to-end QoS message characterizing a down-stream session for a user application, the end-to-end QoS message including at least one QoS parameter set that is expressed at layer 3 and higher of an ISO/IEC basic reference model of Open Systems Interconnection (OSI) (ISO/IEC 7498-1) and is to be passed down to layer 2 of the MC terminal for enabling QoS traffic transport for the session; and

an admission control entity (ACE) performing an admission control decision relating to the session based on the end-to-end QoS message characterizing the QoS stream and concurrent bandwidth usage of the HPNA network,

wherein the QoS stream is a data session QoS stream, and

wherein the non-MC terminal further includes a frame scheduling entity (FSE) located at the MAC sublayer of the non-MC terminal, the FSE of the non-MC terminal scheduling transmission of the data frame received from the higher layer of the non-MC terminal based on QoS information associated with the data frame received from the higher layer of the non-MC terminal, and

wherein the FSE of the non-MC terminal includes a frame scheduling table containing QoS scheduling information for the QoS stream queue associated with the classified data frame, and ~~The out-of-band signaling model non-MC terminal according to claim 28,~~

wherein the non-MC terminal includes a QoS management entity (QME) that receives a frame having associated QoS information indicating a corresponding QoS stream originating at the non-MC terminal is terminating,

further wherein the FSE of the non-MC terminal, in response to the QoS information indicating that the session originating at the non-MC terminal is terminating, removes an entry corresponding to the session originating at the non-MC terminal from the frame scheduling table at the non-MC terminal, and

further wherein the FCE of the non-MC terminal, in response to the QoS information indicating the session originating at the non-MC terminal is terminating, removes an entry having a frame classifier for classifying a data frame that is part of the session originating at the non-MC terminal.

30. (Original) The out-of-band signaling model non-MC terminal according to claim 29, wherein the non-MC terminal sends an end-to-end QoS message to a media control (MC) terminal of the HPNA network, the MC terminal includes a QoS management entity (QME), an FCE located at an LLC sublayer of the MC terminal and an FSE located at a MAC sublayer of the MC terminal, the MC terminal further includes a virtual QoS stream queue corresponding to the QoS stream originating at the non-MC terminal, the end-to-end QoS message containing QoS information indicating that the session originating at the non-MC terminal is terminating,

wherein the QME of the MC terminal receives the end-to-end QoS message containing information indicating that the QoS session originating at the non-MC terminal is terminating,

wherein the FSE of the MC terminal, in response to the end-to-end QoS message containing information indicating that the session originating at the non-MC terminal is terminating, removes the corresponding entry from the scheduling table of the MC terminal.

Claims 31-43 (Canceled)

44. (Currently Amended) A method for controlling media access in an out-of-band signaling model Home Phoneline Network Association (HPNA) network, the method comprising steps of:

receiving an end-to-end QoS message at a Quality of Service (QoS) management entity (QME) of an out-of-band signaling model media control (MC) terminal, the end-to-end message characterizing a down-stream session for a user application and including at least one

QoS parameter set that is expressed at layer 3 and higher of an ISO/IEC basic reference model of Open Systems Interconnection (OSI) (ISO/IEC 7498-1) and is to be passed down to layer 2 of the MC terminal for enabling QoS traffic transport for the session;

performing an admission control decision relating to the down-stream session based on the end-to-end QoS message characterizing the QoS stream and concurrent bandwidth usage of the HPNA network;

forming a frame classification table containing at least one entry having a frame classifier that is used for classifying the data frame received from the higher layer of the MC terminal based on the QoS information associated with the data frame received from the higher layer of the MC terminal;

forming a frame scheduling table containing an entry having QoS scheduling information for the QoS stream queue associated with the classified data frame, wherein the QoS scheduling information includes a set of QoS parameter values, a QoS stream identification (ID) for the QoS stream of the classified data frame and queue status information for the QoS stream queue;

~~The method according to claim 43, further comprising steps of:~~

receiving at the QME of the MC terminal an end-to-end QoS message containing information that the down-stream QoS session is terminating;

removing the corresponding entry from the frame scheduling table for the QoS stream queue associated with the session in response to the information that the down-stream QoS session is terminating; and

removing an entry from the frame classification table having the frame classifier that is used for classifying a data frame that is part of the down-stream session in response to the information that the down-stream QoS session is terminating.

Claims 45-51 (Canceled)

52. (Currently Amended) A method for controlling media access in an out-of-band signaling model Home Phoneline Network Association (HPNA) network, the method comprising steps of:

receiving an end-to-end QoS message at a Quality of Service (QoS) management entity (QME) of an out-of-band signaling model media control (MC) terminal, the end-to-end message characterizing a down-stream session for a user application and including at least one QoS parameter set that is expressed at layer 3 and higher of an ISO/IEC basic reference model of

Open Systems Interconnection (OSI) (ISO/IEC 7498-1) and is to be passed down to layer 2 of the MC terminal for enabling QoS traffic transport for the session;

performing an admission control decision relating to the down-stream session based on the end-to-end QoS message characterizing the QoS stream and concurrent bandwidth usage of the HPNA network;

receiving a data frame for the down-stream session at a logical link control (LLC) layer of the MC terminal, the data frame being received from a higher layer of the MC terminal than the LLC layer of the MC terminal;

classifying the data frame received from the higher layer of the MC terminal for a media access control (MAC) layer of the MC terminal based on QoS information associated with the data frame received from the higher layer of the MC terminal;

associating the classified data frame with a QoS stream queue corresponding to a classification of the data frame and associated with the QoS stream in layer 2 of the MC terminal,

wherein the destination for the data frame is at least one out-of-band signaling model non-media control (non-MC) terminal;

receiving a data frame at an LLC sublayer of the non-MC terminal from a layer higher than the LLC sublayer of the non-MC terminal;

classifying the data frame received from the higher layer of the non-MC terminal for a MAC sublayer of the non-MC terminal based on QoS information associated with the data frame received from the higher layer of the non-MC terminal;

associating the classified data frame with a QoS stream queue at the non-MC terminal corresponding to a classification of the data frame;

scheduling transmission of a data frame based on QoS information associated with the data frame received from the higher layer of the non-MC terminal;

forming a frame scheduling table containing QoS parameter information for the QoS stream queue associated with the classified data frame;

~~The method according to claim 51, further comprising steps of:~~

receiving at the QME of the non-MC terminal ~~receives~~ a frame having associated QoS information indicating a corresponding QoS stream originating at the non-MC terminal is terminating;~~,~~

removing an entry corresponding to the session originating at the non-MC terminal from the frame scheduling table at the non-MC terminal in response to the QoS information indicating that the session originating at the non-MC terminal is terminating;~~,~~ and

removing an entry having a frame classifier for classifying a data frame that is part of the session originating at the non-MC terminal in response to the QoS information indicating the session originating at the non-MC terminal is terminating.

53. (Original) The method according to claim 52, further comprising steps of:

sending an end-to-end QoS message from the non-MC terminal to a media control (MC) terminal of the HPNA network, the MC terminal including a virtual QoS stream queue corresponding to the QoS stream originating at the non-MC terminal, the end-to-end QoS message containing QoS information indicating that the QoS session originating at the non-MC terminal is terminating;

receiving at the MC terminal the end-to-end QoS message containing information indicating that the QoS session originating at the non-MC terminal is terminating; and

removing at the MC terminal an entry corresponding to the session originating at the non-MC terminal from the frame scheduling table in response to the QoS information indicating that the session originating at the non-MC terminal is terminating.

Claims 54-62 (Canceled)

63. (Currently Amended) A method for controlling media access in an out-of-band signaling model Home Phoneline Network Association (HPNA) network, the method comprising steps of:

forming a Quality of Service (QoS) stream queue located at a media access control (MAC) sublayer of an out-of-band signaling model non-media control (non-MC) terminal, the QoS stream having at least one associated QoS parameter value;

receiving a data frame at an LLC sublayer of the non-MC terminal from a layer higher than the LLC sublayer of the non-MC terminal;

classifying the data frame received from the higher layer of the non-MC terminal for a MAC sublayer of the non-MC terminal based on QoS information associated with the data frame received from the higher layer of the non-MC terminal;

associating the classified data frame with the QoS stream queue when a classification of the data frame corresponds to the at least one QoS parameter value associated with the QoS stream queue;

forming a frame classification table containing at least one entry having a frame classifier that is used for classifying the data frame received from the higher layer of the non-MC

terminal based on the QoS information associated with the data frame received from the higher layer of the non-MC terminal;

scheduling transmission of the data frame received from the higher layer of the non-MC terminal based on QoS information associated with the data frame;

forming a frame scheduling table containing QoS parameter information for the QoS stream queue associated with the classified data frame;

~~The method according to claim 62, further comprising steps of:~~

receiving at the non-MC terminal a frame having associated QoS information indicating that a corresponding QoS session originating at the non-MC terminal is terminating;

removing an entry corresponding to the session originating at the non-MC terminal from the frame scheduling table at the non-MC terminal in response to the QoS information indicating that the session originating at the non-MC terminal is terminating; and

removing an entry from the classification table that is used for classifying the received data frame having associated QoS information indicating that the QoS session originating at the non-MC terminal is terminating in response to the associated QoS information that the session is terminating.

64. (Original) The method according to claim 63, further comprising steps of:

sending an end-to-end QoS message from the non-MC terminal to an out-of-band model media control (MC) terminal of the HPNA network, the MC terminal including a virtual QoS stream queue corresponding to the QoS stream originating at the non-MC terminal, the end-to-end QoS message containing QoS information indicating that the QoS session originating at the non-MC terminal is terminating;

receiving at the MC terminal the end-to-end QoS message containing information indicating that the QoS session originating at the non-MC terminal is terminating at the MC terminal; and

removing at the MC terminal an entry corresponding to the session originating at the non-MC terminal from the frame scheduling table in response to the QoS information indicating that the session originating at the non-MC terminal is terminating.

Claims 65-67 (Canceled)